With growing global competition, the process industries must spare no effort in 
insuring continuous process improvement in terms of Increasing profitability; 
Conservation of resources and Prevention of pollution. The question is how can 
engineers achieve these goals for a given process with numerous units and 
streams? Until recently conventional approaches to process design and operation 
put emphasis only on individual units and parts of the process. A more powerful 
integrated approach was lacking. The new field of Process Integration looks 
towards the processing plant as a whole in its attempt to find solutions and 
improvements. Research over the past two decades has resulted in many 
techniques that allow engineers to better understand complex facilities and 
significantly enhance their performance. This textbook presents a comprehensive 
and authoritative treatment of the concepts, tools and applications of Process 
Integration. Emphasis is given to systematic ways of analyzing process 
performance. Graphical, algebraic and mathematical procedures are presented in 
detail. In addition to covering the fundamentals of the subject, the book also 
includes numerous case studies and examples that illustrate how Process 
Integration is solving actual industrial problems. Systematic methodology for 
analyzing the process as an integrated system, identifying global insights of the 
process, and generating optimum strategies and solutions Proper mix of 
fundamental principles, insightful tools, and industrial applications Generic 
techniques that are applicable to a wide variety of processing facilities Packed
with case studies, practical tools, charts, tables, and performance criteria
Extensive bibliography to provide ready access to process integration literature
Excellent review of state-of-the-art technology, development trends, and future research directions
Here is a design manual for those interested in gaining the knowledge and skills necessary for achieving sustainability in residential settings. The book introduces the concept of regenerative design whereby built landscapes sustain and restore vital ecological functions. It guides readers through a design process relevant to new or retrofit residential landscapes that not only minimizes environmental damage, but help repair it. Photos, sketches and case studies from built projects illustrate concepts and practices. The text offers an excellent tool for a wide range of professionals involved in the residential landscape industry.

Sustainability is a powerful force that is fundamentally reshaping humanity’s relationship to the natural world and is ushering in the Age of Integration. The move from well-intentioned environmental friendliness to the higher bar of integral sustainability and regenerative design demands a new type of design professional, one that is deeply collaborative, ethically grounded, empathically connected and technologically empowered. As a response, this book argues for a great leap forward in design education: from an individualistic and competitive model casually focused on greening; to a new approach defined by an integral consciousness, shaped by the values of inclusivity and cooperation, and implemented by a series of integrative behaviors including: an ethically infused design brief, a co-creative design process, on-going value engineering, pre-emptive engineering, design validation through simulation, on-line enabled integrated learning, the use of well vetted rating systems. This book contains the integral frameworks, whole system change methodologies and intrinsic values that will assist professors and their students in an authentic and effective pursuit of design education for a sustainable future.

Optimal Design and Retrofit of Energy Efficient Buildings, Communities, and Urban Centers presents current techniques and technologies for energy efficiency in buildings. Cases introduce and demonstrate applications in both the design of new buildings and retrofit of existing structures. The book begins with an introduction that includes energy consumption statistics, building energy efficiency codes, and standards and labels from around the world. It then highlights the need for integrated and comprehensive energy analysis approaches. Subsequent sections present an overview of advanced energy efficiency technologies for buildings, including dynamic insulation materials, phase change materials, LED lighting and daylight controls, Life Cycle Analysis, and more. This book provides researchers and professionals with a coherent set of tools and techniques for enhancing energy efficiency in new and existing buildings. The case studies presented help practitioners implement the techniques and technologies in their own projects. Introduces a holistic analysis approach to energy efficiency for buildings using the concept of energy productivity. Provides coverage of individual buildings, communities and urban centers. Includes both the design of new buildings and retrofitting of existing structures to improve energy efficiency. Describes state-of-the-art energy efficiency technologies. Presents several cases studies and examples that illustrate the analysis techniques and impact of energy efficiency technologies and controls.

Fundamentals of Integrated Design for Sustainable Building offers an introduction to green building concepts as well as design approaches that reduce and can eventually eliminate the need for fossil fuel use in buildings while also conserving materials, maximizing their efficiency, protecting the indoor air from...
chemical intrusion, and reducing the introduction of toxic materials into the environment. It represents a necessary road map to the future designers, builders, and planners of a post-carbon world." —from the Foreword by Ed Mazria

A rich sourcebook covering the breadth of environmental building, Fundamentals of Integrated Design for Sustainable Building introduces the student and practitioner to the history, theory and technology of green building. Using an active learning approach, the concepts of sustainable architecture are explained and reinforced through design problems, research exercises, study questions, team projects, and discussion topics. Chapters by specialists in the green movement round out this survey of all the important issues and developments that students and professionals need to know. From history and philosophy to design technologies and practice, this sweeping resource is sure to be referenced until worn out. Artful Rainwater Design has three main parts: first, the book outlines five amenity-focused goals that might be highlighted in a project: education, recreation, safety, public relations, and aesthetic appeal. Next, it focuses on techniques for ecologically sustainable stormwater management that complement the amenity goals. Finally, it features diverse case studies that show how designers around the country are implementing principles of artful rainwater design. This title provides clear direction for urban designers, urban planners, and architects to design cities and developments that are sustainable and reduce environmental harms. The text includes background on sustainability, standards for sustainable urbanism, and case studies of exemplars of sustainable urban design."Written for architects, planners, landscape architects, engineers, public officials, and change agent professionals, this important resource defines the issues of sustainable design, illustrates conceptual and case studies, and provides support for continued learning in this increasingly central focus of architects' and urban planners' work."--Jacket. The movement toward creating more sustainable communities has been growing for decades, and in recent years has gained new prominence with the increasing visibility of planning approaches such as the New Urbanism. Yet there are few examples of successful and time-tested sustainable communities. Village Homes outside of Davis, California offers one such example. Built between 1975 and 1981 on 60 acres of land, it offers unique features including extensive common areas and green space; community gardens, orchards, and vineyards; narrow streets; pedestrian and bike paths; solar homes; and an innovative ecological drainage system. Authors Judy and Michael Corbett were intimately involved with the design, development, and building of Village Homes, and have resided there since 1977. In Designing Sustainable Communities, they examine the history of the sustainable community movement and discuss how Village Homes fits into the context of that movement. They offer an inside look at the development of the project from start to finish, describing how the project came about, obstacles that needed to be overcome, design approaches they took, problems that were encountered and how those problems were solved, and changes that have occurred over the years. In addition, they compare Village Homes with other communities and developments across the country, and discuss the future prospects for the continued growth of the sustainable communities movement. The book offers detailed information on a holistic approach to designing and building successful communities. It represents an invaluable guide for professionals and students involved with planning, architecture, development, and landscape architecture, and for anyone interested in creating more sustainable communities. Water conservation is one of the most
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effective sustainable design practices, yet few professionals know how to collect and use rainwater effectively. Rainwater Harvesting the first comprehensive book on designing rainwater harvesting systems. It provides practical guidelines for developing a rainwater harvesting strategy, taking into account climate, public policies, environmental impact, and end uses. Case studies are included throughout. Rainwater Harvesting is a valuable reference for architects, landscape architects, and site engineers. Applications in Design and Simulation of Sustainable Chemical Processes addresses the challenging applications in designing eco-friendly but efficient chemical processes, including recent advances in chemistry and catalysis that rely on renewable raw materials. Grounded in the fundamental knowledge of chemistry, thermodynamics, chemical reaction engineering and unit operations, this book is an indispensable resource for developing and designing innovating chemical processes by employing computer simulations as an efficient conceptual tool. Targeted to graduate and post graduate students in chemical engineering, as well as to professionals, the book aims to advance their skills in process innovation and conceptual design. The work completes the book Integrated Design and Simulation of Chemical Processes by Elsevier (2014) authored by the same team. Includes comprehensive case studies of innovative processes based on renewable raw materials Outlines Process Systems Engineering approach with emphasis on systematic design methods Employs steady-state and dynamic process simulation as problem analysis and flowsheet creation tool Applies modern concepts, as process integration and intensification, for enhancing the sustainability Designing with Solar Power is the result of international collaborative research and development work carried out within the framework of the International Energy Agency's Photovoltaic Power Systems Programme (PVPS) and performed within its Task 7 on 'Photovoltaic power systems in the built environment'. Each chapter of this precisely detailed and informative book has been prepared by an international expert in a specific area related to the development, use and application of building-integrated photovoltaics (BiPV). Chapters not only cover the basics of solar power and electrical concepts, but also investigate the ways in which photovoltaics can be integrated into the design and creation of buildings equipped for the demands of the 21st century. The potential for BiPV, in both buildings and other structures, is explored together with broader issues such as market deployment, and international marketing and government strategies. In addition, more than 20 contemporary international case studies describe in detail how building-integrated photovoltaics have been applied to new and existing buildings, and discuss the architectural and technical quality, and the success of various strategies. Packed with photographs and illustrations, this book is an invaluable companion for architects, builders, designers, engineers, students and all involved with the exciting possibilities of building-integrated photovoltaics. A step-by-step guide to more synthetic, holistic, and integrated urban design strategies, Design Charrettes for Sustainable Communities is a practical manual to accomplish complex community design decisions and create more green, clean, and equitable communities. The design charrette has become an increasingly popular way to engage the public and stakeholders in public planning, and Design Charrettes for Sustainable Communities shows how citizens and officials can use this tool to change the way they make decisions, especially when addressing issues of the sustainable community. Designed to build consensus and cooperation, a successful charrette produces a design that expresses the values and vision of the
community. Patrick Condon outlines the key features of the charrette, an inclusive decision-making process that brings together citizens, designers, public officials, and developers in several days of collaborative workshops. Drawing on years of experience designing sustainable urban environments and bringing together communities for charrettes, Condon’s manual provides step-by-step instructions for making this process work to everyone’s benefit. He translates emerging sustainable development concepts and problem-solving theory into concrete principles in order to explain what a charrette is, how to organize one, and how to make it work to produce sustainable urban design results.

Stuart Walker’s design work has been described as life-changing, inspiring, disturbing and ferocious. Drawing on an extraordinarily diverse range of sources and informed by creative practice, Design for Life penetrates to the heart of modern culture and the malaise that underlies today’s moral and environmental crises. The author argues that this malaise is deep-seated and fundamental to the modern outlook. He shows how our preoccupation with technological progress, growth and the future has produced a constricted view of life – one that is both destructive and self-reinforcing. Based on over twenty-five years of scholarship and creative practice, he demonstrates the vital importance of solitude, contemplation, inner growth and the present moment in developing a different course – one that looks squarely at our current, precarious situation while offering a positive, hopeful way forward – a way that is compassionate, context-based, human scale, ethically motivated and critically creative. Design for Life is an intensely original contribution that will be essential reading for design practitioners and students. Written in a clear, accessible style, it will also appeal to a broader readership, especially anyone who is concerned with contemporary society’s rising inequalities and environmental failings and is looking for a more constructive, balanced and thoughtful direction. An accessible, climate-diverse guide that transforms readers from sustainable design novices to whole-solution problem solvers. Sustainable Design Basics is a student-friendly introduction to a holistic and integral view of sustainable design. Comprehensive in scope, this textbook presents basic technical information, sustainability strategies, and a practical, step-by-step approach for sustainable building projects. Clear and relatable chapters illustrate how to identify the factors that reduce energy use, solve specific sustainable design problems, develop holistic design solutions, and address the social and cultural aspects of sustainable design. Requiring no prior knowledge of the subject, the text’s easy-to-follow methodology leads readers through the fundamental sustainable design principles for the built environment. Sustainably-constructed and maintained buildings protect the health and improve the productivity of their occupants, as well as help to restore the global ecosystem. The authors, leading practitioners and educators in sustainable design, have created a resource that provides a solid introduction to broad level sustainability thinking that students can take forward into their professional practice. Topics include space planning for sustainable design, integrative and collaborative design, standards and rating systems, real-world strategies to conserve energy and resources through leveraging renewable natural resources and innovative construction techniques and their impact on our environment. Usable and useful both in and beyond the classroom, this book: Covers building location strategies, building envelopes and structures, integration of passive and active systems, green materials, and project presentation Examines cultural factors, social equity, ecological systems, and aesthetics Provides diverse student exercises that vary by
climate, geography, setting, perspective, and typology Features a companion website containing videos for each sustainable strategy, matrices, templates, Sketch-Up and AutoCAD files, PowerPoint slides, and extensive instructor resources Sustainable Design Basics is an important resource aimed at undergraduate architecture and interior design students, or first-year graduate students, as well as design professionals wishing to integrate sustainable design knowledge and techniques into their practice. This edited collection brings together leading theoretical and applied research with the intent to design a sustainable global financial future. The contributors argue that our world cannot move toward sustainability, address climate change, reverse environmental degradation, and improve human well-being without aligning the financial system with sustainable development goals like those outlined by the United Nations. Such a system would: a) be environmentally and socially responsible; b) align with planetary boundaries; c) manage natural resources sustainably; d) avoid doing more harm than good; and e) be resilient and adaptable to changing conditions. The overarching theme in this collection of chapters is a response to the worldwide, supranational sustainable finance discussions about how we can transition to a new socio-ecological system where finance, human well-being, and planetary health are recognized as being highly intertwined. This open access book introduces design for Sustainable Product-Service Systems (S.PSS) and for Sustainable Distributed Economies (S.DE). These are introduced as technical and operative tools for the development of a new generation of designers, responsible and capable of designing environmentally, socially and economically sustainable solutions, accessible to all. The book provides a comprehensive framework and also practical tools to support the system design for sustainability process. It overviews methodologies, tools and strategies for Sustainable PSS design applied to Distributed Economies (DE) and provides strategies and design guidelines. All of these are highlighted and expanded upon with international case studies. Sustainable Manufacturing and Design draws together research and practices from a wide range of disciplines to help engineers design more environmentally sustainable products. Sustainable manufacturing requires that the entire manufacturing enterprise adopts sustainability goals at a system-level in decision-making, hence the scope of this book covers a wide range of viewpoints in response. Advice on recyclability, zero landfill design, sustainable quality systems, and product take-back issues make this a highly usable guide to the challenges facing engineering designers today. Contributions from around the globe are included, helping to form an international view of an issue that requires a global response. Addresses methods to reduce energy and material waste through manufacturing design Helps to troubleshoot manufacturability problems that can arise in sustainable design Includes coverage of the legislative, cultural and social impacts of sustainable manufacturing, promoting a holistic view of the subject Design your own sustainable home Many people dream of building a beautiful, environmentally friendly home. But until now there has been no systematic guide to help potential builders work through the complete process of imagining, planning, designing, and building their ideal, sustainable home. Essential Sustainable Home Design walks potential homebuilders through the process starting with key concepts, principles, and a project vision that will guide the house to completion. Coverage includes: How to clarify your ideas and create a practical pathway to achieving your dream A criteria matrix to guide design, material, and systems decisions Creating a strong, integrated design team and
working with professionals and code officials to keep the project on track from start to finish. Key building science concepts that make for a high-performance, durable building Primer on building logistics, material sourcing, and protocols to ensure that the initial vision for the project comes to fruition. One-page summaries and ratings of popular sustainable building materials and system options. Ideal for owner-builders and sustainable building contractors working with clients aiming to design and build a sustainable home. Chris Magwood has designed and built some of the most innovative, sustainable buildings in North America, including the first off-grid, straw bale home in Ontario. He is co-founder and director the Endeavour Centre for Innovative Building and Living and co-editor of the Sustainable Building Essentials series. Chris is the author of Essential Prefab Straw Bale Construction, Essential Hempcrete Construction, Straw Bale Details, More Straw Bale Building, and Making Better Buildings. This volume is a technical and operative contribution to the United Nations "Decade on Education for Sustainable Development" (2005-2014), aiding the development of a new generation of designers, responsible and able in the task of designing environmentally sustainable products. The book provides a comprehensive framework and a practical tool to support the design process. This is an important text for those interested in the product development processes. Covers the most recent topics in the field of environmental management and provides a broad focus on the theoretical and methodological underpinnings of environmental management Provides an up-to-date survey of the field from the perspective of different disciplines Covers the topic of environmental management from multiple perspectives, namely, natural sciences, engineering, business, social sciences, and methods and tools perspectives Combines both academic rigor and practical approach through literature reviews and theories and examples and case studies from diverse geographic areas and policy domains Explores local and global issues of environmental management and analyzes the role of various contributors in the environmental management process Chapter contents are appropriately demonstrated with numerous pictures, charts, graphs, and tables, and accompanied by a detailed reference list for further readings. Experiences are an important part of our lives and increasingly represent a crucial topic to address for businesses and professionals. This book focuses on designing, staging and managing experiences within the context of the events, tourism and hospitality industries. It also illustrates current and future developments in these industries and wider society, with an emphasis on sustainable development. The book offers an innovative approach for successfully creating experiences for (potential) customers that is based on combining insights and methods from the world of design and the social sciences. Moreover, it shows how the experience economy and sustainable development both reinforce one another and create challenges that businesses and professionals can address through this approach. Critical thinking questions, practical examples and international case studies are integrated throughout the text. Combining a design science and a social sciences perspective in one inclusive hands-on approach to designing, staging and managing experiences, this is essential reading for all students of Events, Tourism and Hospitality Management, but also related fields. This book offers practical solutions to achieving sustainable urban design and development, and helps designers communicate thesesolutions effectively to planners, developers and policy makers. Addressing sustainability issues in relation to the design and planning of the urban environment is a complex, multi-disciplinary issue and
solutions never arrive from a single perspective. The authors use design as a
facilitating factor to consider when and by whom decisions that contribute to
sustainability are made, and through three major city-centre case studies –
London, Manchester and Sheffield – they consider social, environmental
and economic factors and examine their relationship to the decision-making
process. Designing Sustainable Cities begins by identifying the key processes and
lead decision-makers. The following chapters develop an understanding of the
dimensions of sustainability, presenting the tools by which the dimensions can be
analysed. Later chapters illustrate the trade-offs and the relationships between the
dimensions of sustainability – with case study examples – as well as the use of IT in
making design decisions. Finally, the book makes recommendations for future
approaches to the design, development and ongoing management of urban
environments. Designing Sustainable Cities covers: latest research data on the
urban environment and the interaction between social, economic and
environmental issues; methods of understanding the context in which urban
design takes place; guidance on the codes of practice; process maps to help
understand the context, make trade-offs and develop design solutions that allow
for change methods for testing the consequences of design proposals
and monitoring outcomes. Sustainability is an increasingly vital subject for all kinds
of designers, whether they work in industrial design, graphic design or
architecture. This book clearly explains the key issues and debates to allow
students and practitioners to adapt and integrate them into their own working
practices. "Design for Sustainable Change" explores how design thinking and
design-led entrepreneurship can address the sustainability agenda. It examines
how the processes of design provide methodologies for driving sustainable change
in businesses, organizations and society more generally. Throughout the book,
Anne Chick and Paul Micklethwaite present debates around design and
sustainability and the integration of the two. In-depth international case studies
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methodologies for driving sustainable change in businesses, organizations and society more generally. Throughout the book, Anne Chick and Paul Micklethwaite present debates around design and sustainability and the integration of the two. In-depth international case studies and interviews put the theories discussed into a real-world context. This volume is a technical and operative contribution to the United Nations "Decade on Education for Sustainable Development" (2005-2014), aiding the development of a new generation of designers, responsible and able in the task of designing environmentally sustainable products. The book provides a comprehensive framework and a practical tool to support the design process. This is an important text for those interested in the product development processes. Sustainable Design through Process Integration: Fundamentals and Applications to Industrial Pollution Prevention, Resource Conservation, and Profitability Enhancement, Second Edition, is an important textbook that provides authoritative, comprehensive, and easy-to-follow coverage of the fundamental concepts and practical techniques on the use of process integration to maximize
the efficiency and sustainability of industrial processes. The book is ideal for adoption in process design and sustainability courses. It is also a valuable guidebook to process, chemical, and environmental engineers who need to improve the design, operation, performance, and sustainability of industrial plants. The book covers pressing and high growth topics, including benchmarking process performance, identifying root causes of problems and opportunities for improvement, designing integrated solutions, enhancing profitability, conserving natural resources, and preventing pollution. Written by one of the world’s foremost authorities in integrated process design and sustainability, the new edition contains new chapters and updated materials on various aspects of process integration and sustainable design. The new edition is also packed with numerous new examples and industrial applications. Allows the reader to methodically develop rigorous targets that benchmark the performance of industrial processes then develop cost-effective implementations Contains state-of-the-art process integration and improvement approaches and techniques including graphical, algebraic, and mathematical methods Covers topics and applications that include profitability enhancement, mass and energy conservation, synthesis of innovative processes, retrofitting of existing systems, design and assessment of water, energy, and water-energy-nexus systems, and reconciliation of various sustainability objectivesThis book discusses the most significant ways in which design has been applied to sustainability challenges using an evolutionary perspective. It puts forward an innovation framework that is capable of coherently integrating multiple design for sustainability (DfS) approaches developed so far. It is now widely understood that design can and must play a crucial role in the societal transformations towards sustainability. Design can in fact act as a catalyst to trigger and support innovation, and can help to shape the world at different levels: from materials to products, product–service systems, social organisations and socio-technical systems. This book offers a unique perspective on how DfS has evolved in the past decades across these innovation levels, and provides insights on its promising and necessary future development directions. For design scholars, this book will trigger and feed the academic debate on the evolution of DfS and its next research frontiers. For design educators, the book can be used as a supporting tool to design courses and programmes on DfS. For bachelor’s and master’s level design, engineering and management students, the book can be a general resource to provide an understanding of the historical evolution of DfS. For design practitioners and businesses, the book offers a rich set of practical examples, design methods and tools to apply the various DfS approaches in practice, and an innovation framework which can be used as a tool to support change in organisations that aim to integrate DfS in their strategy and processes.Sustainable Site Design introduces the core concepts of sustainability as applied to landscape architecture. Focusing on site-scale design, this book provides a regional framework for integrating sustainable practices throughout the design process. From landscape analysis to program and design development, each design phase is illustrated with detailed case studies covering a broad range of innovative built landscape architectural projects. This book explores potentialities and emerging issues to strategies and waterside planning and design, developing research results and detailed cases of interest in response to city change, to promote sustainable development in a variety of ways. It seeks to include some key waterfront matters in linking new spatial patterns to social
dynamics and climate change, for future practice. The book is structuring into two parts: The first one – ‘Advancing Riverfront Transformation’ – examines proposals on urban waterfronts and relations between urban spaces and social dynamics to revitalise and re-appropriate urban environment with sustainable design solutions. The second one – ‘Outlining Blue-Green Opportunities’ – develops proposals on waterfront urban spaces and places with promotion of sociability and enjoyment, integrating cultural and economic values, health and wellbeing. This comprehensive work shows how to design and develop innovative, optimal and sustainable chemical processes by applying the principles of process systems engineering, leading to integrated sustainable processes with 'green' attributes. Generic systematic methods are employed, supported by intensive use of computer simulation as a powerful tool for mastering the complexity of physical models. New to the second edition are chapters on product design and batch processes with applications in specialty chemicals, process intensification methods for designing compact equipment with high energetic efficiency, plantwide control for managing the key factors affecting the plant dynamics and operation, health, safety and environment issues, as well as sustainability analysis for achieving high environmental performance. All chapters are completely rewritten or have been revised. This new edition is suitable as teaching material for Chemical Process and Product Design courses for graduate MSc students, being compatible with academic requirements world-wide. The inclusion of the newest design methods will be of great value to professional chemical engineers. Systematic approach to developing innovative and sustainable chemical processes Presents generic principles of process simulation for analysis, creation and assessment Emphasis on sustainable development for the future of process industries This open access book provides insight into the implementation of Life Cycle approaches along the entire business value chain, supporting environmental, social and economic sustainability related to the development of industrial technologies, products, services and policies; and the development and management of smart agricultural systems, smart mobility systems, urban infrastructures and energy for the built environment. The book is based on papers presented at the 8th International Life Cycle Management Conference that took place from September 3-6, 2017 in Luxembourg, and which was organized by the Luxembourg Institute of Science and Technology (LIST) and the University of Luxembourg in the framework of the LCM Conference Series. Get the comprehensive guide to the sustainable design of schools. The elementary and secondary school buildings and campuses built today are the schools of the future. Sustainable School Architecture is a guide to the planning, architecture, and design of schools that are healthy, stimulating, and will conserve energy and resources. Written with the needs of architects, construction professionals, educators, and school administration in mind, the book provides a road map for sustainable planning, design, construction, and operations. By its very nature, a school is often the centerpiece of its community and, therefore, well positioned to take the lead in influencing environmental awareness. Building on this point, Sustainable School Architecture shows how eco-friendly practices for school construction can create an environment that young students will emulate and carry into the world. Written by experts on sustainable school design, this book: Focuses on the links between best sustainable practices and the specific needs of educational institutions. Has nineteen international case studies of the best contemporary sustainable schools located in urban, suburban, and rural
communities in temperate, tropical, and extreme climate zones. Contains valuable information on the California Collaborative for High Performance Schools (CHPS) and the Leadership in Energy and Environmental Design (LEED®) rating system. Serves as a resource for incremental modernization and operation strategies as well as comprehensive transformation. Offers tips on running an integrated, community-based design process with support information on the materials and systems of the sustainable school. Includes contributions by experts on approaches to the sites, systems, maintenance, and operation of sustainable schools. With a practical overview of how sustainability can be achieved in new and existing schools, and how to maintain this momentum in the years ahead, this important book provides architects with detailed guidance for designing healthier learning environments to help usher in a more promising future. Whether it is the effects of climate change, the avalanche of electronic and plastic waste or the substandard living and working conditions of billions of our fellow global citizens, our ability to deal with unsustainability will define the twenty-first century. Given that most consumption is mediated through products and services, the critical question for designers is: How can we radically reshape these tools for sustainable living? As a guide and reference text, Product Design and Sustainability provides design students, practitioners and educators with the breadth and depth needed to integrate the most appropriate sustainable strategies into their practice. It establishes the principles that underpin sustainability and introduces a diverse range of social, economic and environmental design responses and tools available to designers. The numerous real-world examples illustrate how these strategies play out in different product sectors and reinforce the view that sustainability is the most positive opportunity and creative challenge facing designers today. This book: delivers a comprehensive guide to the principles of sustainability and how they apply to product design that can readily be integrated into curricula and design practice reveals many of the issues specific product sectors are facing, and provides the depth and breadth needed for formulating and developing sustainable design strategies to address these issues empowers and inspires designers to engage with sustainability through its many examples and insightful interviews with practitioners is fully illustrated with over 300 photographs, graphs and diagrams and supported by chapter summaries, annotated further reading suggestions, and a glossary.

GREEN BUILDING: PRINCIPLES AND PRACTICES IN RESIDENTIAL CONSTRUCTION provides a current, comprehensive guide to this exciting, emerging field. From core concepts to innovative applications of cutting-edge technology and the latest industry trends, this text offers an in-depth introduction to the construction of green homes. Unlike many texts that adopt a product-oriented approach, this book emphasizes the crucial planning, processes, and execution methods necessary for effective, environmentally sound construction. This text demonstrates that Earth-friendly products and energy-efficient materials take planning in order to make a building truly green. This visionary text helps students and professionals develop the knowledge and skills to think green from start to finish, empowering and inspiring them to build truly sustainable homes. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Design for Health: Sustainable Approaches to Therapeutic Architecture Guest-Edited by Terri Peters This issue of AD seeks out innovative and varied sustainable architectural responses to designing for health, such as: integrating sensory gardens and
landscapes into the care environment; specifying local materials and passive technologies; and reinvigorating aging postwar facilities. Contributors include: Anne-Marie Adams, Sean Ahlquist, Giuseppe Boscherini, Robin Guenther, Charles Jencks, Richard Mazuch, Stephen Verderber, Featured architects: 100% Interior, Arup, C.F. Møller, Lyons, MASS Design Group, Mongomery Sisam Architects, Penoyre & PrasadThe Fully Updated, Indispensable Study of Sustainable Design Principles Fundamentals of Integrated Design for Sustainable Building is the first textbook to merge principles, theory, and practice into an integrated workflow. This book introduces the technologies and processes of sustainable design and shows how to incorporate sustainable concepts at every design stage. This comprehensive primer takes an active learning approach that keeps students engaged. This book dispenses essential information from practicing industry specialists to provide a comprehensive introduction to the future of design. This new second edition includes: Expansive knowledge—from history and philosophy to technology and practice Fully updated international codes, like the CAL code, and current legislations Thorough coverage of critical issues such as climate change, resiliency, health, and net zero energy building Extensive design problems, research exercise, study questions, team projects, and discussion questions that get students truly involved with the material Sustainable design is a responsible, forward-thinking method for building the best structure possible in the most efficient way. Conventional resources are depleting and building professionals are thinking farther ahead. This means that sustainable design will eventually be the new standard and everyone in the field must be familiar with the concepts to stay relevant. Fundamentals of Integrated Design for Sustainable Building is the ideal primer, with complete coverage of the most up to date information.In the age of corporate responsibility, green technology and sustainability continue to grip the consciousness of business and academic institutions. However, development of appropriate business-driven green applications requires an awareness of best practices of the green agenda. Green Technology Applications for Enterprise and Academic Innovation addresses the importance of green technology and sustainability for technology, enterprise, and academic innovation in energy management, renewable energy, and carbon reduction strategies. This book acts as the bridge for practitioners, academia, businesses, industrialists, governmental executives, and students seeking research in this emerging area.Urban Systems Design: Creating Sustainable Smart Cities in the Internet of Things Era shows how to design, model and monitor smart communities using a distinctive IoT-based urban systems approach. Focusing on the essential dimensions that constitute smart communities energy, transport, urban form, and human comfort, this helpful guide explores how IoT-based sharing platforms can achieve greater community health and well-being based on relationship building, trust, and resilience. Uncovering the achievements of the most recent research on the potential of IoT and big data, this book shows how to identify, structure, measure and monitor multi-dimensional urban sustainability standards and progress. This thorough book demonstrates how to select a project, which technologies are most cost-effective, and their cost-benefit considerations. The book also illustrates the financial, institutional, policy and technological needs for the successful transition to smart cities, and concludes by discussing both the conventional and innovative regulatory instruments needed for a fast and smooth transition to smart, sustainable communities. Provides
operational case studies and best practices from cities throughout Europe, North America, Latin America, Asia, Australia, and Africa, providing instructive examples of the social, environmental, and economic aspects of “smartification Reviews assessment and urban sustainability certification systems such as LEED, BREEAM, and CASBEE, examining how each addresses smart technologies criteria Examines existing technologies for efficient energy management, including HEMS, BEMS, energy harvesting, electric vehicles, smart grids, and moreThe Second Edition of Sustainable Residential Interiors addresses cutting edge processes, strategies, and principles as well as details for in-depth product vetting criteria. Award-winning, leading interior designer Annette Stelmack shares her expertise from the perspective of LEED Building Design & Construction projects, healthy interiors, and chemical sensitivities, addressing principles, strategies, and solutions for design practitioners. A comprehensive update of the current state of the sustainable interior design industry is provided, including present and upcoming industry transformations, thought-leading principles, strategies and practices for project implementation, and fine points and resources for in-depth product vetting to support high-performing, healthy interiors. Sustainable Residential Interiors takes readers through an integrated design process, demonstrating relevant principles and practices that apply to essentially any interiors project toward creating an environment that is healthy, high-performing, functional, sustainable, and beautiful. In doing so, it: Promotes critical thinking about health and environmental issues in the building industry Features checklists and current resources, providing a "hands on" practical approach Addresses in-depth, applicable third party certifications and details on relevant building rating systems Provides in-depth strategies and criteria for fixed interior finishes, fixtures, equipment and furnishings Demonstrates successful, relevant, diverse and inspiring case studies Delivers comprehensive tools and resources for researching and vetting products' composition and chemical make-up. Evaluates all aspects of a building's interior to identify and implement methods that: save energy and water; reduce Co2 emissions and waste; improve indoor air quality free of toxins; and are responsive to environmental impacts Encourages forward-thinking by featuring inspirational statements from mentors, peers, and industry leaders Urges interior designers to commit to designing safe, healthy environments that are integral to a professional code of ethics, which ensure the delivery of positive outcomes for the client and any building's future occupants

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